



STATE TAX COMMISSION OF MISSOURI
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Cost of Capital Study

January 1, 2015

Staff Recommendation

Industry: Telecom Services			SIC: 4890
Equity:			Reference
Risk Adjusted Models			
	CAPM	10.70%	Page 5
Dividend Growth Models			
	DGM or DCF Model (Dividend Growth)	11.00%	Page 7
	DGM or DCF Model (Earnings Growth)	12.75%	Page 7
	DGM or DCF Model (b * ROE = Growth)	11.25%	Page 7
Estimated Cost of Equity Capital		12.25%	
Debt:			
Estimated Cost of Debt Capital		6.50%	Page 3
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Cost of Capital Summary			
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Capital Component	Market Capital Structure	Cost of Capital	Before-Tax Weighted Average Cost of Capital
Debt	30.00%	6.50%	1.95%
Equity	70.00%	12.25%	8.58%
TOTAL	100.00%		10.53%
		Rounded	10.50%

Cost of Capital Study

January 1, 2015

Staff Recommendation

Industry: Telecom Services			SIC: 4890
Equity:	Direct Rate		Reference
	Estimated Cost of Equity Capital	5.00%	Page 8
Debt:			
	Estimated Cost of Debt Capital	4.78%	Page 9
Cost of Capital Summary			
Capital Componer	Market Capital Structure	Cost of Capital	Before-Tax Weighted Average Cost of Capital
Debt	30.00%	4.78%	1.43%
Equity	70.00%	5.00%	3.50%
TOTAL	100.00%		4.93%
		Rounded	5.00%

Cost of Capital Study
January 1, 2015
Analysis of the Market Capital Structure
Analysis of Debt Capital

Industry: Telecom Services		Ratings	
Company	Ticker	Moody's	S&P
America Movil	AMX	A2	A-
AT&T Inc.	T	Baa1	BBB+
Atlantic Tele-Network	ATNI	NR	NR
Dycom Inds.	DY	Ba2	BB
Gen'l Communic. 'A'	GNCMA	B2	NR
Inteliquent Inc.	IQNT	NR	NR
j2 Global	JCOM	B1	BB
Manitoba Telecom Svcs.	MBT.TO	NR	BBB
NTELOS Hldgs.	NTLS	NR	B
Shenandoah Telecom.	SHEN	NR	NR
Sprint Corp.	S	B1	B+
T-Mobile US	TMUS	Ba3	BB
Telephone & Data	TDS	Ba1	BB
TELUS Corporation	T.TO	Baa1	BBB+
U.S. Cellular	USM	Ba1	BB
Verizon Communic.	VZ	Baa1	BBB+
Vodafone Group ADR	VOD	Baa1	A-
Vonage Holdings	VG	NR	NR
Overall Average Debt Rating Range		Baa - Ba	BBB - BB

NR = Not Rated

Mergent Bond Record, Jan 2015, Page 213					
Corporate	Aaa	Aa	A	Baa	Ba*
October	3.92%	3.99%	4.13%	4.69%	
November	3.92%	4.04%	4.18%	4.79%	
December	3.79%	3.89%	4.05%	4.74%	
Average	3.88%	3.97%	4.12%	4.74%	7.00%
Public Utilities	Aaa	Aa	A	Baa	
October		3.98%	4.06%	4.67%	
November		4.03%	4.09%	4.75%	
December		3.90%	3.95%	4.70%	
Average		3.97%	4.03%	4.71%	
Industrials	Aaa	Aa	A	Baa	
October	3.92%	4.00%	4.20%	4.70%	
November	3.92%	4.04%	4.27%	4.82%	
December	3.79%	3.89%	4.15%	4.77%	
Average	3.88%	3.98%	4.21%	4.76%	

Debt Yield Rate Estimate:	6.50%
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Rating Sources:
Mergent Bond Record, January 2015;
www.standardandpoors.com;
www.moody's.com

Ratings Dispersion & Averages			
Agency	Number of Companies		
S&P			
AAA	1		
AA	2		
A	3	2	6
BBB	4	4	16
BB	5	5	25
B	6	2	12
CCC	7		
C	9		
D	10		
Total:		13	59
Average Rating:			4.54
Moody's			
Aaa	1		
Aa	2		
A	3	1	3
Baa	4	4	16
Ba	5	4	20
B	6	3	18
Caa	7		
Ca	8		
C	9		
Total:		12	57
Average Rating:			4.75

Cost of Capital Study
January 1, 2015
Analysis of the Market Capital Structure

Industry: Telecom Services									SIC: 4890
Company Name	Stock Symbol	Debt (\$ mil)	Debt %	Stock Price	Shares Outstanding	Equity (\$ mil)	Equity %	Total Capital (\$ mil)	
America Movil	AMX	35,486.1	31.52%	21.88	3523.8	77,095	68.48%	112,580.6	
AT&T Inc.	T	76,011.0	30.28%	33.74	5186.9	174,996	69.72%	251,007.3	
Atlantic Tele-Network	ATNI	-	0.00%	59.92	15.8	947	100.00%	946.7	
Dycom Inds.	DY	446.9	30.42%	30.07	34	1,022	69.58%	1,469.1	
Gen'l Communic. 'A'	GNCMA	1,104.4	70.66%	11.16	41.1	459	29.34%	1,562.9	
Inteliquent Inc.	IQNT	-	0.00%	13.67	30.1	412	100.00%	411.6	
j2 Global	JCOM	593.3	19.93%	50.28	47.4	2,383	80.07%	2,976.7	
Manitoba Telecom Svcs.	MBT.TO	873.1	28.24%	28.55	77.7	2,218	71.76%	3,091.5	
NTELOS Hldgs.	NTLS	519.6	66.87%	12.25	21	257	33.13%	777.0	
Shenandoah Telecom.	SHEN	224.3	25.28%	27.63	24	663	74.72%	887.4	
Sprint Corp.	S	32,017.0	52.52%	7.36	3934	28,947	47.48%	60,964.4	
T-Mobile US	TMUS	24,394.0	49.69%	30.59	807.5	24,699	50.31%	49,092.9	
Telephone & Data	TDS	1,720.1	38.59%	25.16	108.8	2,737	61.41%	4,457.3	
TELUS Corporation	T.TO	9,055.0	27.85%	38.52	609	23,459	72.15%	32,514.0	
U.S. Cellular	USM	878.0	21.00%	39.22	84.2	3,303	79.00%	4,180.7	
Verizon Communic.	VZ	89,658.0	31.26%	47.62	4141.1	197,191	68.74%	286,849.0	
Vodafone Group ADR	VOD	35,613.6	28.09%	34.48	2644	91,174	71.91%	126,787.3	
Vonage Holdings	VG	137.0	14.76%	3.73	212	791	85.24%	928.2	
Mean:			31.50%			35,153	68.50%	52,305	
Median:			29.26%				70.74%		
Market Capital Structure Estimate	Debt:		30.00%			Equity:	70.00%		

Stock Price = 2014 Average Closing Price

Data Source: Value Line Investment Survey

Cost of Capital Study
January 1, 2015
Capital Asset Pricing Model (CAPM)

$$\text{CAPM} \Rightarrow K_e = R_f + (\beta * \text{ERP})$$

Industry: Telecom Services	SIC: 4890
Risk-Free Rate (R_f)	3.00%
Beta (β)	1.10
Equity Risk Premium (ERP): ($R_m - R_f$)	7.00%
Adjusted Equity Risk Premium: ($\beta * \text{ERP}$)	7.70%
Cost of Equity Capital - CAPM	10.70%
Ibbotson SBBI 2015 Market Report	
Long-Term Government Bonds - Income Return ¹	6.10%
Intermediate Term US Treasury Coupon Note Yield (5-Year) ¹	5.40%
Short-Term US Treasury Bill Yield (30-Day) ¹	3.50%
Long-Term Horizon Expected Equity Risk Premium ² (Large Compay Stock Total Return - Long-Term US Government Bond Income)	7.00%
¹ Table 7: Basic Series, Summary Statistics of Annual Total Returns, Arithmetic Mean, p. 13	
² Table 10: Long-Horizon Expected Equity Risk Premium (historical), p. 16	
Federal Interest Rates - IRS.gov, January 2015 Weighted Average Rates	
Long Term Treasury (30 year) ¹	3.35%
Composite Corporate Bonds ²	4.48%
¹ http://www.irs.gov/Retirement-Plans/Weighted-Average-Interest-Rate-Table	
² http://www.irs.gov/Retirement-Plans/Composite-Corporate-Bond-Rate-Table	
The ValueLine Investment Survey, Selected Yields, Page 4445, January 9, 2015	
U.S. Treasury Securities:	
5-year	1.68%
10-year	2.19%
30-year	2.76%
30-year Zero	2.86%
Federal Reserve Statistical Release (http://www.federalreserve.gov/Releases/H15/20150105/) 1//2015	
Treasury constant Maturities:	
5-year	1.67%
10-year	2.18%
20-year	2.47%
30-year	2.75%
Risk-Free Rate of Return R_f Estimate:	3.00%

Cost of Capital Study

January 1, 2015

Beta (β) Analysis

Industry: Telecom Services		SIC: 4890
Company Name	Stock Symbol	Beta " β "
America Movil	AMX	1.00
AT&T Inc.	T	0.75
Atlantic Tele-Network	ATNI	1.00
Dycom Inds.	DY	1.30
Gen'l Communic. 'A'	GNCMA	1.10
Inteliquent Inc.	IQNT	1.85
j2 Global	JCOM	1.10
Manitoba Telecom Svcs.	MBT.TO	0.55
NTELOS Hldgs.	NTLS	1.00
Shenandoah Telecom.	SHEN	1.10
Sprint Corp.	S	1.20
T-Mobile US	TMUS	1.10
Telephone & Data	TDS	1.20
TELUS Corporation	T.TO	0.50
U.S. Cellular	USM	1.05
Verizon Communic.	VZ	0.70
Vodafone Group ADR	VOD	NMF
Vonage Holdings	VG	1.20
Mean:		1.04
Median:		1.10
Beta (β) Estimate:		1.10

NMF = Not Meaningful

Data Source: Value Line Investment Survey

Cost of Capital Study
January 1, 2015
Dividend Growth Model (DGM or DCF)

$$\text{DGM or DCF Model} \implies K_e = \frac{D_1}{P_0} + g$$

where
 K_e = Cost of Equity
 D_1 = Expected Dividends
 P_0 = Current Price
 g = Sustainable Growth

Industry: Telecom Services												SIC: 4890
Company Name	Stock Symbol	Stock Price P_0	Expected Dividend D_1	Dividend Yield (D_1 / P_0)	Dividend Growth g	Earnings Growth g				(Dividends) K_e	(Earnings) K_e	$g=(b * ROE)$ K_e
							b	ROE	$g=(b * ROE)$			
America Movil	AMX	21.88	0.37	1.69%	7.50%	6.00%	78.93%	36.86%	29.09%	9.19%	7.69%	30.78%
AT&T Inc.	T	33.74	1.89	5.60%	2.00%	5.00%	26.84%	15.02%	4.03%	7.60%	10.60%	9.63%
Atlantic Tele-Network	ATNI	59.92	1.18	1.97%	6.50%	9.00%	58.30%	4.50%	2.62%	8.47%	10.97%	4.59%
Dycom Inds.	DY	30.07	-	0.00%	0.00%	19.00%	100.00%	8.24%	8.24%	NMF	19.00%	8.24%
Gen'l Communic. 'A'	GNCMA	11.16	-	0.00%	0.00%	29.50%	100.00%	4.51%	4.51%	NMF	29.50%	4.51%
Inteliquent Inc.	IQNT	13.67	0.60	4.39%	24.50%	11.00%	61.22%	25.00%	15.31%	28.89%	15.39%	19.69%
j2 Global	JCOM	50.28	1.23	2.45%	8.50%	10.50%	58.29%	15.27%	8.90%	10.95%	12.95%	11.35%
Manitoba Telecom Svcs.	MBT.TO	28.55	1.70	5.95%	0.00%	-2.50%	28.70%	12.51%	3.59%	5.95%	3.45%	9.54%
NTELOS Hldgs.	NTLS	12.25	-	0.00%	0.00%	0.00%	150.78%	157.13%	236.92%	NMF	NMF	NMF
Shenandoah Telecom.	SHEN	27.63	0.47	1.70%	8.50%	14.00%	72.32%	12.62%	9.13%	10.20%	15.70%	10.83%
Sprint Corp.	S	7.36	-	0.00%	0.00%	0.00%	100.00%	-11.79%	-11.79%	NMF	NMF	NMF
T-Mobile US	TMUS	30.59	-	0.00%	0.00%	6.50%	100.00%	-1.74%	-1.74%	NMF	6.50%	NMF
Telephone & Data	TDS	25.16	0.56	2.23%	4.50%	-3.00%	61.03%	3.44%	2.10%	6.73%	NMF	4.33%
TELUS Corporation	T.TO	38.52	1.68	4.36%	9.50%	10.00%	35.93%	19.11%	6.87%	13.86%	14.36%	11.23%
U.S. Cellular	USM	39.22	-	0.00%	0.00%	-1.50%	100.00%	4.10%	4.10%	NMF	NMF	4.10%
Verizon Communic.	VZ	47.62	2.20	4.62%	2.50%	7.00%	48.37%	29.60%	14.32%	7.12%	11.62%	18.94%
Vodafone Group ADR	VOD	34.48	1.70	4.93%	-7.00%	-9.00%	-3.62%	6.55%	-0.24%	NMF	NMF	4.69%
Vonage Holdings	VG	3.73	-	0.00%	0.00%	8.00%	100.00%	17.35%	17.35%	NMF	8.00%	17.35%
Mean:				2.22%	3.72%	6.64%	70.95%	19.90%	19.63%	10.90%	12.75%	11.32%
Median:				1.84%	1.00%	6.75%	66.77%	12.57%	5.69%	8.83%	11.62%	9.63%
Cost of Equity Capital - DCF K_e Estimate:										11.00%	12.75%	11.25%

NMF = Not Meaningful

b = (1 - payout ratio) = Retention Ratio

ROE = Return on Book Equity

Stock Price = 2014 Average Closing Price

Data Source: Value Line Investment Survey

Support for Market Multiples
Telecom Services
2015 Assessment Year

Industry Overall				
Company Name	Ticker	\$Stock\$ Average	Earnings	P/E Multiple
America Movil	AMX	21.88	1.56	14.02
AT&T Inc.	T	33.74	2.5	13.50
Atlantic Tele-Network	ATNI	59.92	1.83	32.74
Dycom Inds.	DY	30.07	1.15	26.14
Gen'l Communic. 'A'	GNCMA	11.16	0.18	61.98
Inteliquent Inc.	IQNT	13.67	1.15	11.89
j2 Global	JCOM	50.28	2.58	19.49
Manitoba Telecom Svcs.	MBT.TO	28.55	1.7	16.79
NTELOS Hldgs.	NTLS	12.25	-2.54	NMF
Shenandoah Telecom.	SHEN	27.63	1.23	22.46
Sprint Corp.	S	7.36	-0.87	NMF
T-Mobile US	TMUS	30.59	-0.32	NMF
Telephone & Data	TDS	25.16	1.29	19.50
TELUS Corporation	T.TO	38.52	2.31	16.68
U.S. Cellular	USM	39.22	1.65	23.77
Verizon Communic.	VZ	47.62	4	11.90
Vodafone Group ADR	VOD	34.48	2.89	11.93
Vonage Holdings	VG	3.73	0.27	13.82
Mean:				21.11
Median:				16.79
Weighted Mean:				22.86
P/E Estimate:				20.0
Equity Rate:				5.00%

NMF = Not Meaningful

Stock Price = 2014 Average Closing Price

Note: Units per share comparisons

Data Source: ValueLine Investment Survey

Cost of Capital Study
January 1, 2015
Direct Debt Rate Calculation

Industry: Telecom Services		
Direct Capitalization Debt Rate		
Interest Expense		\$ 11,442
Total Value of Debt (TVD)		\$ 239,157
Current Yield = Interest Expense/TVD		4.78%

\$ (millions)

Data Source: ValueLine Investment Survey